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     1999-199208 [17]
                        WPIDS
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     Hot rolled steel sheet manufacturing method for motor vehicle
TI
     plates - involves rough and finish rolling
     of heated steel, followed by isothermal or slow cooling
     and then cooling steel rolled into coil.
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     (KAWI) KAWASAKI STEEL CORP
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                    A 19990216 (199917) *
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     JP 11043725
     JP 3400351
                    B2 20030428 (200330)
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FDT
PRAI JP 1997-139802
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     JP 11043725 A UPAB: 19990503
     NOVELTY - Steel which contains 0.05-0.4 mass% of carbon, 1.0-3.0
     mass% of silicon, 0.6-3 mass% of manganese, 0.2-2.0 mass% of chromium and
     remainder of iron, is heated to 1000-1300 deg. C and then subjected to a
     rough rolling and finishing rolling
     at 780-980 deg. C followed by cooling to 620-780 deg. C. Then
     the sheet is held isothermally for 1-10 sec or slow cooled at a
     cooling rate of 20 deg. C/sec. When a cooling
     temperature of 350-500 deg. C is attained the steel is rolled in
     a coil and then cooled to 300 deg. C at a
     cooling rate of 10-200 deg. C/hr. DETAILED DESCRIPTION - After
     rolling up in a coil, a 2-60 minutes isothermal maintenance or a
     slow cooling at a rate of 50 deg. C/hr is performed. Subsequent
     cooling to 300 deg. C is then done. The steel obtained
    has a pro-eutectoid ferrite main phase and a secondary phase consisting of
    martensite, a needle like ferrite and a retained austenite.
         USE - For manufacturing steel plate for motor vehicles.
         ADVANTAGE - The steel possesses superior mouldability with
     impact-proof property, since steel contains pro-eutectoid
     ferrite as its main phase and needle like ferrite martensite and retained
     austenite as its secondary phase.
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